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# **THE SOCIAL CONSTRUCTION OF COMPETENCES AND THE FORMS OF TRANSITION IN INDUSTRIAL TERRITORIES**

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## **1. THE GENERAL PURPOSE: CONTRASTING THE EVOLUTION AND NATURE OF INDUSTRIAL COMPETENCES**

The purpose of this communication is to present some reflexions on the transformation and the evolution of three industrial regions located in three Mediterranean countries (France, Spain and Italy). We are particularly interested in highlighting some dimensions of the evolution and nature of industrial competences and the relationship of this evolution with forms of industrial cooperation.

In every region, competences, skills and practical knowledge are built in a “territorial learning space” that takes place through forms of cooperation among the economic, social and political actors.

With this general frame in mind, we want to show how the forms of cooperation, which are carried out within and between enterprises, are subject to a tension between a model of standard and high production volume (“mechanical type”) and a model of diversified production (“organic type”). Moreover, these two patterns of social interaction and cooperation are associated with the informal nature of the social relationship, the nature of labor markets and the position of power in the global value chain.

In a new international context open to the dynamic pressure of competitive force, “the richness of regions” is associated with their position in an ongoing “practical knowledge production”.

These questions draw on the litterature of “learning processes” in organizations, industrial districts and clusters. Most of the productive tissues analysed in this study are comparable to districts in process of *clusterization*. In a broad sense, the industrial district can be considered as an ideal type (Zeitlin, 2007) or, in other terms, both as an analytical instrument, a model of industrial policy (Brusco, 1992) or as a real form of production possessing certain ideal characteristics.

Among the cases we studied, some are in fact districts (Biella), others have ceased to be districts but have kept certain of its aspects (the agribusiness system of Basse Vallée du Rhône, Grasse). Sometimes, the district is a stated goal, a model of reference for industrial policy that, although remaining vague, is socially legitimated (Canavese). As a matter of fact, numerous districts became increasingly open and “porous” to external activites and became, as a result, less autonomous, less integrated and less inclusive. It is thus often necessary to use the more generic idea of *cluster* or *industrial network*.

## **2. THE ANALYSED TERRITORIES, METHODOLOGY AND CONTRAST BETWEEN TRAJECTORIES**

The territories we analysed have a strong identity and have experienced deep changes in the last two decades as a result of the fragmentation of industrial structures and the diversification of economic activities. In the cases we studied, knowledge and the exploration of new opportunities are becoming a strategic resource.

This reflection on the evolution of competences is issued from a study on the trajectories of four industrial territories in the PACA region (France) with a long industrial tradition, which have faced strong processes of transformation in the last twenty years. Two types of evolutionary forms emerged: “reconversion-rupture” and “continuity-adaptation.” In the first form, exemplified by the naval sector of La Ciotat and minery in Gardanne, the activities that structured the industrial territory disappeared. In La Ciotat, a group of companies became specialized in leisure boats, holding no relation with the previous structure. In Gardanne, the arrival of a large electronics company will favor the development of smaller companies in the micro-electronic sector. In the second form, transition as adaptation, the industrial territory continued to specialize in the same kind of activity. Such is the case of the perfumery sector in Grasse and the agribusiness sector in Basse Vallée du Rhone.

In accordance with the long comparative tradition that has characterized the LEST, the analysis of these four cases was further complemented with that of other territories in Italy and Spain as examples of either rupture or adaptation. In the Piedmont (Italy) we considered: the textile-tailoring sector district of Biella and the industrial tissue of the Canavese that grew in the shadows of Olivetti and after the latter closed. In the Levante region (Spain): Sagunto, ceramics and agribusiness in Valencia and finally, the paradigmatic case of tailoring in Galice (Spain).

For many years, the regions that we analyzed were characterised by an industrial organization around the following different scenarios: a) one large single company (La Ciotat, Canavese, Sagunto), b) a small number of highly integrated large companies (the Gardanne Basin Mine), c) some large companies that organize and favour several industrial activities in the industrial region (Grasse, Biella and tailoring in Galice—at the end of the world renowned road to Santiago de Compostela, Spain—in the 70s.)

New cases, the analysis of mobilized strategies and resources as well as of interorganizational relations, allowed us to observe differences, common traits and future trends for each of the types. As a result, the contrast between rupture and adaptation becomes less clear.

### **3. THE SOCIAL CONSTRUCTION OF NEW RESOURCES AND COMPETENCES**

These processes of redefinition of industrial activity lead to either the destruction or liberation of resources for the industrial territory (3.1); turning knowledge into a strategic resource (3.2); and modifying the articulation between the new companies and the social organization of territories (3.3).

#### **3.1. The destruction and liberation of resources for the industrial territory.**

The cases we studied showed a great variety of natural, physical and human resources (employee skills), as well as of other intangible immaterial resources (available practical knowledge, industrial territory's reputation) and relational resources. The reorganization that lead to the disappearance of companies and the appearance of new entities had two types of consequences with regard to resources. They destroyed them and in so doing, they liberated them as well, making them increasingly available for new business opportunities.

In the industrial textile district of Biella (Piedmont, Italy), industrial wildlands are exploited to shelter projects that revitalize the industrial territory. In La Ciotat (PACA, France), port installations were reused for leisure purposes. In almost all industrial territories, we find "spin off" phenomena that contribute to transform the composition and dynamism of the industrial tissue. In Galice during the 80s, numerous companies emerged from the initiative of technicians of the sector that combined their skills of organization, commercialization and design. (Hoss, D., y Herranz, R. 1990; Herranz, R. y Hoss, D. 1995).

The case of Canavese is very illustrative of the combination of material and immaterial resources. Some of the companies that persisted or emerged after the disappearance of Olivetti are located on the "edge of technological knowledge." They are high tech companies (information technology, biotechnology, nanotechnology) that partially reproduce the industrial culture of Olivetti in their orientation towards innovation and technological discovery.

**3.2. The exploration of intangible resources: knowledge as a strategic resource.** For the most part, these territories were historically constituted to "exploit" locally abundant natural resources: flowers, wool, charcoal, water, among others. However, in an unstable economic and technological context, "exploitable" resources often need to be developed, for the most strategic resources, that is, the most susceptible of sustaining the industrial territory are now immaterial: human, organizational, even symbolic, as in the case of Galice around fashion or Grasse, considered as the birthplace of world perfumery.

Among these new resources, one of them plays the most important role: knowledge. Contrary to natural resources, knowledge inserts the industrial territory in an "exploratory" dynamic in search of new productive paths where knowledge is both the product and its basis.

These mutations, observable in the microelectronics sector at Canavese (It), Grasse (Fr) or the tailoring sector in Galice (Sp), are not independent of the general movement

towards professionalization that contributes, in the European context, to reinforce the place of academic and formalized knowledge in industry.

Knowledge has thus become a strategic resource for the survival and development of these industrial territories. At a company scale, “goodwill” designates the created value thanks to its own know-how. It is related to the company’s ability to combine resources. At an industrial territory scale, the creation of value depends on the ability to combine diverse resources and skills in a way that is both economically sustainable and socially acceptable. If the actors of the industrial territory are not capable of this, value may be destroyed.

**3.3. The articulation of new companies, “spin off” processes and the social organization of territories.** Following the entrepreneurial crises that affected the regions we studied, some companies disappeared (sometimes the company to disappear was the only company in the industrial territory); often, this crisis was followed by “spin off” processes, one of the forms adopted by the release of resources, that lead to the emergence of many companies that influence the spread of competences and the industrial reconfiguration of the region.

In Grasse (PACA, Fr), the shutdown of their company pushed former employees to open their own firms, thus inflecting the trajectory of the region. The history of Olivetti, of tailoring in Galice, of microelectronics in Gardanne or of the development of the agribusiness sector in Bas Vallée Du Rhône were accompanied by “spin off” processes.

The resources that were freed in this way became available for cooperation. These new entrepreneurs, who were formerly employed and protected by their organization from the uncertainty of the environment, find themselves directly confronted with the uncertainty and complexity of their environment. From then on, in order to break with their isolation, they are condemned to develop formal and informal means of cooperation in clubs of entrepreneurship or of company leadership. These networks are resources that they mobilize to sustain their business.

In almost all cases, companies continue to “explore” the possible complementarity between their different business activities and the opportunities for horizontal cooperation. This is resource the resource they have to face some of the challenges derived from their size.

We claim that a key competence for a region lies in its ability to ensure the diffusion and access to knowledge inside the industrial territory and to protect it from a competitive context. Nevertheless, even inside a region there is tension between acquiring a particular knowledge by an individual (or company) as basis for a competitive strategy and its acquisition by a group as a means to construct collective strategies. Thus, control and power mediate learning and cooperation processes.

#### ***4. COMPETENCES AND THE SOCIAL ORGANIZATION OF THE TERRITORIAL LEARNING SPACE***

**4.1. The theory of resources and control over resources in learning processes.** The theory of resources and competences allowed us to specify what covers a competence at

an organizational scale (Wernerfelt, 1984, Barney, 1991). Recently, this approach is applied to the analysis of industrial territories. The latter are made up of actors that are carriers and creators of competences. Thus, the question becomes that of knowing what is the relation between the competences of a territory and the competences of the companies it comprises.

At a regional scale, knowledge is created and diffused in a “territorial learning space,” which is a way of portraying the institutional and processual complexity involved in the creation and renewal of knowledge, its combination, diffusion and usage by the members of an industrial community in a regional context.

This system focuses on the creation of new practical and theoretical knowledge, favours the incorporation of external knowledge, their interpretation, their diffusion through different formal and informal channels. All studies on organizational learning (Nonaka and Takeuchi, 1995), national and regional systems of innovation (Lundvall, 1992) or industrial districts (Zeitlin, 2007) reinforce the importance of analyzing learning processes in terms of interactions.

However, in analyzing learning through social interactional processes, it is also necessary to observe the relations of power and control that are produced in the processes of acquiring and using knowledge. These processes of power may channel or block learning processes, thus having an impact on the “structure of learning opportunities” in the industrial territory.

From our perspective, both the knowledge that is used in a territory and the social organization that produces it are strategic resources and competences. Thus, the analysis of these resources must pay special attention to strategies of power and control. The latter influence the balance of a territory and the trajectory of development of a learning space.

**4.2. Environmental opportunities and threats: the strategic character of competences and learning spaces.** The territorial learning space is dynamic by nature. It is subject to changes in productive processes and product markets (i.e. increased competition), available knowledge, the incorporation of new actors both of internal or external origin and to the extension of territorial boundaries.

There are three extreme situations that affect the territorial learning space by either blocking (lock-in), enriching or empauverishing it: a) the risk of external competition, b) the escape of leading companies from the territory, c) the incorporation of external actors (penetration of capital, company absorption).

a) **The risk of external competition.** A common threat to all of the cases we studied was the competition from low-cost emerging countries, as well as change in taste and knowledge. In the case of productive tissues of long-standing tradition, perpetuation depends on their ability to innovatively renew their skills to face the demands of an “expert” clientele in terms of variety, quality and specification.

However, actors do not define threats and new horizons in the same way, especially if among those who define the key to strategic orientation. Thus, in the case of Biella, the appearance of unfavorable indicators did not lead its actors to significantly rectify the

district trajectory. Perspectives of diversification, of more informal concepts or even of control on commercial distribution were insufficient to lead to a bifurcation. As economic history has so often shown, the success of a model often numbs actors facing imminent threats. (Kemp, 1969)

b) **The escape of leading companies from the region.** Concentration of power and possession of knowledge in a company that can adopt a nomad behavior may destabilize the territorial learning space.

Processes of concentration of power (Cainelli, Iacobucci, and Morganti, 2006) carry the threat of having the leading entrepreneur take on a cosmopolitan track. An intermediary between specialized companies and final consumers on an international market, the leading company acquires, on one hand, knowledge of the means and “organizational” and “professional skills” it can mobilize and, on the other, knowledge of the “social structure of markets” (Beccattini, 1992). The leader occupying the place of the strategic knot in a “learning network” can thus compare costs of suppliers inside and outside the territory. The most fatal effect for a territory may be the departure of the leader and with it of its stock of knowledge.

There are, however, other imaginable possibilities. The policies of Benetton and Montebelluna in Italy, of Inditex and the Cooperatives of Mondragon in Spain, are illustrative examples of a process where relocation of production is followed by the promotion of business in the industrial territory of a higher status in the chain of production of value and thus in the structure of learning opportunities.

c) **External penetration.** Despite the existing differences between the canonic and the real districts, the idea of district is a reference for many large companies and territories. (Piore, 1992) Processes of imitation and isomorphism are currently in place. Nevertheless, considering imitating a “complex configuration” is always difficult, some companies will rather try to conquer them. Districts such as Biella, Grasse, Galice-moda or the agribusiness system in Basse Vallée du Rhône were spaces rich in information, knowledge, invisible informal networks, also rich in terms of culture of cooperation and patrimony of professional trust, all vulnerable to exploitation by large companies.

However, when large external capitals are involved and seek to control the strategic phases of the value chain, as in the case of Grasse or the agribusiness sector, the trajectories accompanying these strategies and the consequences on the industrial territory and its learning space vary.

*A case of “partial empauverishment” of the district’s abilities* is found in Grasse. External groups did not favour the creation of a district focused on learning or knowledge. The disorganization of the structure of the district favoured the creation of an *open network* of centrifugal nature. Despite all this, perfume companies, highly professionalized but very dependant—upstream or downstream from their trade-developed niche strategies and struggled to collectively build an institutional environment favourable to the perpetuation of their activity.

The evolution of Basse Vallée du Rhône exemplifies *a case of clusterization of companies and institutions that “enrich” the productive tissue*. The processes of concentration of local companies in the 60s and 70s are linked to the arrival of

multinational companies. However, despite the similarities with Grasse, the situation evolved differently. The large companies focused on products of second transformation had the support of small subcontracting companies and they succeed in renewing their offer thanks to their investment in research and development.

The agribusiness sector finds solid support in a group of institutions of coordination, training and technical assistance. Contrary to Grasse, public and private actors involved in the cluster were able to implement institutions that would generate a renewal of resources and would carry the consolidation of an image of reference in terms of innovation and knowledge development.

## **5. FUNDAMENTAL MECHANISMS FOR LEARNING SPACES**

Learning processes on a territorial scale lie on three distinct yet evidently related mechanisms. These mechanisms differ in their role and configuration from one industrial territory to another.

The first mechanism is the formal cooperation among companies, among companies and training, research or technical centers, among companies and “smuggler” actors such as consultants. The second is a mechanism of diffusion of knowledge that functions through imitation or informal transmission, product of cooperative relations among companies or at their edges (the “parking” effect described by Saxenian, 1994). The third mechanism lies on the functioning of the labor market and the modes of construction of skills on the industrial territory.

**5.1. The role of formal inter-organizational cooperations and organic and mechanic learning spaces.** Inside an industrial territory, the possibility of developing formal cooperations depends both on the company’s strategic orientations and the presence of a leader, whether a company or a collective actor.

The strategy’s effect on the cooperation lies on the alternative between “standardized production” and “flexible specialization.” Standardization of products and normalization of processes reduce the opportunities for cooperation. Inversely, close relations to diverse and demanding clients are a means of acquiring skills where tacit and hard to imitate factors are most important. In the first type, the *mechanic space*, information is diffused through highly formalized orders involving low reflexivity. In the second case, the *organic space*, relations develop on the basis of reflexive and interpretative communication. Goals and means are specified through the *design* in a collaborative process during which new skills and opportunities can be discovered (Beckert, 1997).

The agribusiness system of Basse Vallée du Rhône is currently controlled by multinationals that seized the skills of small companies (often subcontractors of larger ones), accelerating the process of diversification of products, increasing the level of quality at each stage in the value chain. The latter lead to a multiplication of technical programmes of high level in the agribusiness domain, as well as to an increase in research projects with local universities. The development of Agroparc in 1990 is an effort to build and institutionalize a “*learning network*” among all actors in question. Until the creation of a competitiveness pole in 2005, Grasse had no real means of updating the collective skills necessary to face global, heterogeneous and uncertain markets.



Nevertheless, some local small and medium companies did focus on high quality niches abandoned by the large leading companies.

For the different cases we analysed, it is important to note the increasing importance of the diversification of production, whether in agribusiness, the perfume industry of high standing or textile and tailoring. Nevertheless, it is also important to highlight the tension between a trend towards diversified production and an equally strong trend towards standard and high production volume—the tension between a trend towards the *mechanical* model and the trend towards the *organic* model.

This tension is especially evident in new spaces of *industrial networks* linked to new technologies. The microelectronics sector faces the same dilemma: to adopt a policy of standardized production and underuse engineer skills, or to bet on a system based on research and production focused on the needs of specific clients.

However, not all actors play an equal role in processes of cooperation. In some cases, leading companies carry innovations and projects. In others, leadership is exercised through a federation of efforts: professional associations, consortia, etc. Their ability to contribute to a shared learning space is unequal among territories.

Following the deep crisis associated to the disappearance of leading companies (La Ciotat, Sagunto, Canavese), new associations of entrepreneurs did not always try to overcome the absence of local leadership. Nevertheless, in the case of Canavese, the disappearance of Olivetti was followed by the creation of a consortium whose objective was to stimulate the cooperation among companies and research centers, thus creating intermediate spaces for the production of new skills (Etzkowits and Leydesdorff, 2000).

In the Basin Mine, leadership shifted progressively from heavy industry towards two large companies of the microelectronics sector. However, the creation of the École des Mines, specialized in microelectronics was equally supported by the leaders of High Tech and CREMSI (ARCSIS), a professional association supported by the State that seeks to reinforce a space of collaboration and mobility between science and industry.

**5.2. Informal networks and the diffusion of knowledge.** In a period of transition, informal social relations are particularly important to the generation of innovation on the edge of formal structures. Through them, it is possible to exchange information, knowledge, as well as the validation of interpretations. To study these relations, it is necessary to observe the spaces where they are structured, the factors that facilitate their formation and the role they play (Granovetter, 2005).

We have often observed the importance of private relations between entrepreneurs of complementary industries in the introduction of productive innovations that are mutually advantageous and in the creation of shared knowledge. Whether in the perfumeries of Grasse, the agribusiness system of Basse Vallée du Rhône or the entrepreneurs of microelectronics, sharing leisure spaces favours the circulation of information and knowledge that can be used to develop professional cooperations.

Informal relations can sometimes be reinforced through identifications of an emotional or relational nature to the land and culture of a country. This phenomenon of identification can be observed at Grasse, in Galice and Biella. It nourishes the artistic

and professional orientations emerging there. Nevertheless, this fusion of local heritage can be paralyzing when the enhancement of the past masks the opportunities lying in the future.

Inversely, in some industrial spaces such as La Ciotat or Sagunto, technology, sector, and social structures can play against the development of these relations. In La Ciotat, along the Athélia zone in particular, the reconstitution of a productive tissue based on fiscal arguments and the heterogeneity of the social and professional origins of company leaders did not allow, for a long time, the development of informal relations favourable to the transmission of knowledge and skills.

Relations become meaningful for the transmission of new knowledge in relation to structures of competition, cooperation and socialization. They are, in some cases, starting points for associations that favour cooperation practices, entrepreneurial initiatives or the search for new sources of support in universities and research centers, as it seems to have been the case at Canavese. They can also drive the creation of companies: start up or spin off. In contexts as different as tailoring in Galice, subcontracting in microelectronics and perfumery in Grasse, skilled workers created their own companies with other colleagues following a departure or starting from a subcontracting treaty with the company of origin. These processes allowed for the diffusion and acquisition of entrepreneurial skills, leading to the development of strategies of diversification of clients to reduce the risks linked to excessive dependency.

These relations are not only formed among leaders but also among employees. Social relations among workers linked through the “ethos” of a profession favour the transmission of knowledge, even when the entrepreneurial culture is secretive. Envy to keep property is combined with strong social control (what does he do, how does he do it?) through the intense social relations engendered in the zone. At Grasse, the culture of secrecy followed by large companies is partially eased by friendship and family ties among workers from the same region but also by “communities of practice” that link them (Wenger, 1998). Osmosis phenomena of conscious and unconscious behavior are observable, amplified by phenomena of competition and institutional isomorphisms.

Nevertheless, the labor market and the social networks it relies on are progressively less linked to the industrial territory due to technological changes and the level of skill required.

**5.3. The construction of skills and new spaces of mobility.** In the process of transmission of knowledge at a territorial scale, the dynamism of local, regional, national and international labor markets are superposed and combined. The construction of employee skills and competences and the organization of their mobility are vectors of this transmission. During transitions, the nature of knowledge that is nevertheless used contributes to transform labor markets, which in turn contribute to modify the modalities of transmission of knowledge.

In particular, in these territories, knowledge was historically developed and transmitted from one generation to another, through very narrow internal markets and local markets. Training through experience (learning on the job) and under the supervision of more skilled workers was the main source of learning. Nevertheless, the institutions of

professional training or of higher education, absent or external to the territories, began to play a more important role in the construction and social origin of the labor market. This change is observed in the last ten to twenty years depending on the zone. The mobilisation of codified knowledge contributed to destabilize labor markets that relied largely on local social networks, especially where training centers are physically distant from the industrial territory.

The cases of Biella or Grasse exemplify a system where mobility (horizontal or vertical) was mostly local for management, technicians and workers, which favoured the transmission and sharing of experience in production and management. In the case of Biella, at a time when marketing and innovation become key factors of success, training in these areas is absent in the zone. Grasse encounters the same difficulty. The local educational system can barely face the needs emerging from technological change and the perfumers who used to learn their occupation on the job are now trained in Paris. Thus, companies hire technicians who are not linked to the industrial territory, which weakens the role of social networks in the process of seeking and selecting new personnel, as well as their role in mobility, thus altering the system of social stratification.

Inversely, the tailoring industry in Galice or the microelectronics sector illustrate in what ways the mutation of a productive system can regenerate the educational offer and contribute to renew the mechanisms of acquisition and transmission of knowledge. Technicians had been self-taught for a long time. However, in the 90s, a strong demand for skilled personnel linked to the diversification of production and markets stimulated the development of schools for medium and high-level technicians at a local level<sup>1</sup>. The same thing happened in the microelectronics sector where a specialized school was created in Gardanne near Marseille to face the demands of a high technology industrial tissue in need of skilled workers. The availability of engineers from other regions or countries is equally important. In an open labor market, sometimes cosmopolitan, these engineers play the role of “catchers” of knowledge. Here, the diffusion of knowledge does not function solely on an endogenous principle, but mobilizes networks knit between “here and there”.

## **6. CONCLUSION**

Knowledge, both practical and theoretical, has become a major resource for industrial territories and the creation of a learning system, itself in transformation, has become a major competence for an industrial territory. In line with the tradition of industrial district studies, the productive system of an industrial territory is linked to the learning system in that actions and interactions in space and in the productive tissue are intimately related both to production and learning phenomena.

Territorial learning spaces had traditionally functioned according to a rationale of “exploitation” of material resources, since the competence linked to the industrial territory was mainly built through the transmission and collection of individual skills socially defined through tradition. The transitions undergone by industrial territories have led them to adopt a rationale of “exploration” where strategic resources and

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<sup>1</sup> Subsequently, these schools encountered difficulties in finding job opportunities.

knowledge have to be built. In this perspective, the competence linked to an industrial territory is more a collective competence based on a relational mechanism of social interactions between organizations and/or between individuals. Actor rationale is thus structurant of the competitiveness of an industrial territory and of its system of learning.

However, in a context of acute turbulence, there is great risk of higher dependence vis à vis “centrifugal industrial networks” dominated by mechanical forms of training. Trends towards standardization and normalization develop in the context of these new relations of dependence in networks. These relations, without thoroughly limiting learning, tend to stimulate behaviour that significantly reduces favourable opportunities for the development of creativity.

In the current context, the components of a cluster organized according to relations of a mechanical type are very vulnerable. They are easily attracted to the regional economies of specialized developing countries, at least at first, in activities of low technological content and focused on production of standardized and normalized goods. When the economy of an industrial territory is based on relations of an organic type, its position is comparatively more certain as is its capacity to surmount its environment.

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